

Amendments to the Claims:

Please cancel claims 1 to 12 as presented in the underlying International Application No. PCT/EP2003/009919 without prejudice.

Please add new claims 13 to 24 as indicated in the listing of claims below.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 to 12 (cancelled).

Claim 13 (new): A method for producing a connection area on a work piece, the connection area being positioned precisely with respect to a reference area on the work piece, a robot-guided processing tool being used for shaping the connection area, the processing tool forming a tool/sensor combination with a sensor system having at least one sensor and being fixedly connected to the tool, the method comprising:

moving the tool/sensor combination during a positioning phase from a proximity position independent of a position of the work piece in a working space of a robot into a preliminary position, the tool/sensor combination in the preliminary position being oriented in a precisely positioned fashion with respect to a reference area of the tool, and

guiding the tool/sensor combination, in a processing phase, from the preliminary position along a processing path under control of the robot, the connection area being formed on the work piece during the course of the processing path,

the moving step including running through an iterative closed-loop control process to move the tool/sensor combination into the preliminary position, the iterative closed-loop control process including:

generating an actual measured value of the at least one sensor,

comparing the actual measured value with a setpoint measured value generated within the scope of a setup phase,

calculating a movement vector of the tool/sensor combination from a difference between the actual measured value and the setpoint measured value using a Jacobi matrix calculated within the scope of the setup phase, and

displacing the tool/sensor combination using the movement vector.

Claim 14 (new): The method as recited in claim 13 wherein the iterative closed-loop control process is completed if either the difference between the setpoint measured value and the actual measured value lies below a predefined threshold value, or a reduction brought about in the difference during successive iteration steps lies below a predefined threshold value.

Claim 15 (new): The method as recited in claim 13 wherein the positioning phase and the processing phase take place in an overlapping fashion with respect to one another.

Claim 16 (new): The method as recited in claim 13 wherein a TCP/IP interface is used for communication between an open-loop control device of the robot and an evaluation unit of the sensor system.

Claim 17 (new): The method as recited in claim 13 wherein measured values of different individual sensors of the sensor system are used for position control for positioning the tool/sensor combination with respect to different vehicle body types or with respect to different reference areas of a same vehicle body type.

Claim 18 (new): The method as recited in claim 13 wherein the connection area is a tail light area of a vehicle body.

Claim 19 (new): The method as recited in claim 13 wherein the connection area are welds of adjustment elements for orienting a cockpit to a front end wall of a vehicle body.

Claim 20 (new): The method as recited in claim 13 wherein the work piece is a vehicle

body.

Claim 21 (new): A device for producing a connection area on a work piece, the device comprising:

- a processing tool guided using a robot;
- a sensor system fixedly connected to the processing tool and having at least one sensor;
- a control device for controlling the robot and the processing tool;
- an evaluation unit for evaluating measured values of the sensor system;
- at least one of the sensors being a metrically noncalibrated sensor.

Claim 22 (new): The device as recited in claim 21 wherein the processing tool is a stamping or punching tool.

Claim 23 (new): The device as recited in claim 21 wherein the processing tool is a bolt welding device.

Claim 24 (new): The device as recited in claim 21 wherein the at least one sensor is a triangulation sensor measuring points.

Claim 25 (new): The device as recited in claim 21 wherein the at least one sensor is an optical sensor measuring over an area.

Claim 26 (new): The device as recited in claim 21 wherein the device is a vehicle body processing device.